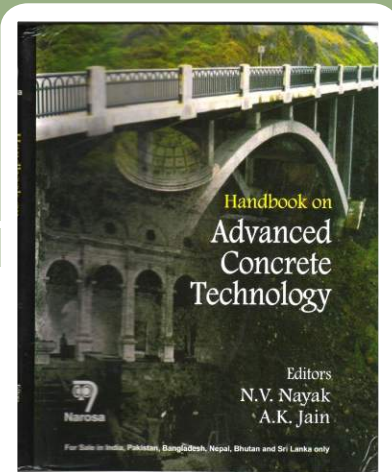




ICI UPDATE

An Electronic-Bulletin from the Indian Concrete Institute



From the President's Desk



It gives me immense pleasure to note that World of Concrete India 2015 is being held at International Trade Exposition Hyderabad from 2nd to 4th March 2015. This is the 2nd World of Concrete Exhibition to be held in India; the first one was held in October 2013 at Hyderabad. The event is organized by Informa Exhibitions, USA & Inter Ad Exhibitions India and supported by Indian Concrete Institute. There have been a lot of advancements in Concrete Technology and Construction during the past three decades. With a view to deriving benefits from these advancements in Technology and implementation of the same in Concrete Construction, the engineers and other stake-holders need to know the different innovative materials, equipment and accessories. World of Concrete India 2015 is one such platform where Engineers / Architects get exposure to the state-of-the-art technology, products and services, hands-on demonstration and interaction with facility providers. Besides the exhibition, ICI is also organizing Concrete Construction Technology Summit on selected topics at the same venue.

In view of the extensive use of concrete in our country, there is already a scarcity of aggregates in different parts of the country. Also production of conventional materials like cement involves CO₂ emissions - the primary source of global warming. Research work has been going on all over the world to address this very issue. From 13th to 14th March 2015, ICI Nagpur Centre is organizing National Seminar AMCON 2015. This seminar will focus on New Developments in the use of Alternative Materials for Concrete and is expected to be participated by renowned Concrete Technologists of the country.

I thank both Hyderabad and Nagpur Centres for their effort and wish them success. I also request you to attend these two programs.

In the previous e-bulletin, I appealed to ICI Members / Well-Wishers to be generous enough to donate money so that the proposed ICI HQ building becomes a reality. I am very glad to inform you that positive responses have already started coming in. However, we are in dire need of more such response.

Before I conclude, I would like ICI members to bring all the stake-holders in Concrete technology and Construction under the fold of ICI to be members of ICI through convincing persuasion.

HAPPY & COLOURFUL HOLI

Prof. S. Saraswati
President

Hand Book on 'Advanced Concrete Technology' authored by more than 25 Eminent Experts is available at 20% discounted price of Rs.700/- for ICI members only. Postage extra. Please contact Ph : 044-24912602 ; email : ici4@airtelmail.in.

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I request all ICI centres to inform the headquarters about their forthcoming activities well in advance. We have to ensure that there is no overlapping of seminars, workshops and conferences to be organized by different centres.

R. Radhakrishnan
Secretary General

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ICI - UTTARAKHAND CENTRE

Concrete Day :

Concrete Day was celebrated on 26th November, 2014 by ICI Uttarakhand Centre jointly with UltraTech Cement Ltd. Prof. S.K. Bhattacharyya, Director CSIR-CBRI (Chief Guest), Sh. Shashi Gaggar, Vice-President Services, UltraTech Cement Ltd., Dr. Achal Kumar Mittal, Chairman, ICI Uttarakhand Centre (Principal Scientist, CSIR-CBRI), Dr. U. K. Sharma, Secretary, ICI Uttarakhand Centre, and Dr. Partha Bhattacharya, UltraTech Cement Ltd., graced the occasion by their presence.

The function began with lamp lighting ceremony by the Chief Guest. Dr. Achal Kumar Mittal welcomed the gathering and briefed about ICI and its activities.



Dr. Mittal insisted the Engineers and Architects to become the members of ICI and to organize more and more technical activities under the banner of ICI Uttarakhand Centre. More than 150 ICI members/Guests participated in the celebration. The participants included Scientists from CSIR-CBRI, faculty from IIT Roorkee, Engineers from PWD, THDC and RES Uttarakhand,

Practicing Engineers/Architects and Students.

A keynote lecture was delivered by Shri. R.K. Vishnoi, GM, THDC on “Approximate Optimization of High Performance Concrete”.

Dr. S. R. Karade, Chairman of the Jury informed the audience about the Jury Members and briefed on different categories of Awards. He also elaborated on the procedure for nominations and their evaluation.

Dr. A. K. Mittal, Sh. Shashi Gaggar, and the Chief Guest of function announced and presented various Awards.

“Outstanding Concrete Technologist of the Year-2014” was awarded to Dr. Bhupinder Singh, Associate Prof., IIT Roorkee. Citation was read by Er. S.K.Singh, Principal Scientist, CSIR-CBRI.



“Outstanding Concrete Structure of the Year-2014” was awarded to “ONGC building of Dehradun”.





Dr. Umesh Sharma proposed vote of thanks. The function ended up with Dinner.



A view of Audience

ICI - BHOPAL CENTRE

Concrete Day :

ICI Bhopal Centre and UltraTech Cement Limited organized **“Concrete Day & M.P. State Level Construction Awards 2013-14”** on 21st November 2014. About 300 Delegates representing Technical Institutions like Maulana Azad National Institute of Technology, Bhopal; Engineering Colleges and Polytechnics of the State; Government Departments like M.P.P.W.D., M.P. Housing Board, Bhopal Development Authority, Bhopal Municipal Corporation, etc.; Contractors and Industries took part in the function. Honorable PWD Minister, Government of MP, Shri. Sartaj Singh was the Chief Guest and Shri. Purshottam Sharma, ADG Police, MP was the Special Guest of the event.



Guests on Dias (L to R) Mr. Rakesh Balya, Mr. Shashi Gaggar, Mr. Vinay Gupta, Mr. Purushottam Sharma, Mr. Sartaj Singh; Mr. Navin Tewari, & Dr. Anurag Misra.

Mr. Shashi Gaggar welcomed the Guests and Participants. He along with Mr. B. K. Joshi, Regional Head, Technical Services, UltraTech Cement Ltd., informed about the whole process adopted in selection of the award winning entries. He also shared the efforts of UltraTech Cement Ltd., in improving the construction practices and quality of concrete through various technical activities and premium technical services offered to the construction industry.

Dr J.S. Chouhan, Chairman, ICI Bhopal Centre informed about the activities of the Centre and importance of organization of Concrete Day and Construction Awards in motivation and encouragement to the construction professionals. He expressed hope that organizing this kind of programmes would provide an ideal platform for Academicians, Practicing Engineers, Construction Companies, Contractors, Training Agencies, Government Works Departments and Execution Bodies like M.P.P.W.D, M.P. Housing Board, Bhopal Development Authority, Bhopal Municipal Corporation etc. to share their experiences and come out with a workable solution in order to improve the durability related problems in concrete structures.

Mr. Vinay Gupta informed about the ICI, its activities and contribution in making concrete a sustainable material of construction. Dr. A. K. Jain, Secretary, ICI Bhopal Centre presented a brief bio-data of Dr. Anurag Misra. Dr. Anurag Misra, Director, Anand International College of Engineering, Jaipur delivered a technical presentation on "Jaipur Metro a Precast Concrete Experience". The presentation was extraordinarily informative and captivated the audience.

State level winners were awarded by Chief Guests Mr. Shashi Gaggar and Mr. B.K.Joshi.



Shri R. K. Gupta, Senior Structural Consultant, Indore was honored with Life time Achievement Award for his contribution to the construction Industry.



Mr. Rakesh Balya, Mr. B.K.Joshi, Mr. J. S. Chouhan and Mr. Purshottam Sharma awarded the winners in regional categories.



In his address, Mr. Purshottam Sharma not only appreciated the efforts of the construction fraternity in creation of the civil infrastructure and making the life of the people comfortable but also motivated the Engineers and Architects to make all the efforts to ensure that the quality of the infrastructure being created in our country match with the best in the world.

Chief Guest of the function appreciated the efforts of ICI Bhopal Centre and UltraTech Cement Limited for organizing the programme. He valued the Technical information provided by Dr. Anurag Misra on "Jaipur Metro a Precast Concrete Experience". Having seen the technology put in use, he expressed his happiness and stated that we may have to look towards the developed nations for funds to create such world class infrastructure. As far as the technology and capacity is concerned, our engineering fraternity is capable enough, he added. He also emphasized the need of continuous technological upgradation of professionals in their field of operation.

Er. B.K. Joshi proposed vote of thanks.

ICI - GOA CENTRE

One - Day Seminar:

ICI Goa Centre organized a one-day seminar on “Alternative to River Sand - A Sustainable Approach to Construction” in Goa on 28th November 2014.

The Seminar was organized keeping in view the acute shortage of River sand, being faced in Goa due to ban on mining of river sand. Due to this, the price of river sand has become exorbitant and unviable for construction economies. Therefore, ICI Goa Centre decided to create awareness among the practicing civil engineers and construction professionals in Goa on alternative to river sand now being used all over India and abroad.

The Seminar was inaugurated by Principal Chief Engineer, PWD, Goa. Eminent experts in the field delivered talks on this subject. Dr. A.K. Mullick, Former DG, NCBM, delivered the key note address and advised use of M-sand, Bottom Ash, Slag and Recycled Aggregates as alternative to river sand. He advised blending of alternative fine aggregates with river sand or M-sand for IS-383 compliance. He informed that M-sand utilization is permitted by IS codes and hence there should not be any hesitation in its use in construction.

Prof. BV.V. Reddy from IISC, Bengaluru shared technical details on M-sand. He highlighted that even m-sand will also become scarce in a decade due to limitations of resources of rock mines. Hence industrial wastes and mine tailing are to be accepted as construction materials.

Dr. L. H. Rao, Former Jt. Director, NCBM, Hyderabad shared details on suitability of Granulated blast furnace slag (GGBS) as alternative to sand. It is noteworthy that GGBS is available in abundance in Goa as waste of steel plants. He informed that BIS is in process of bringing an amendment in IS codes to permit limited utilization of GBS in construction works. Er. Pradeep Garg, SE,

CPWD shared case study on pre-engineered buildings to reduce consumption of sand in building construction. He advised to move toward non-masonry and non RCC construction technology for building constructions.

Other speakers included Prof. K.G. Gupta from Goa Engineering College, Er. Anil kulkarni, VP, UltraTech Cement, Er. Saurabh Biswas from L&T who shared local alternatives to sand and their production technology.

The Seminar was attended by more than 200 Delegates from Goa as well as Belgaum, Udupi and karwar. Delegates represented Goa PWD, CPWD, Local Municipalities, Airport Authority, Consultants, Cement Companies like UltraTech & ACC, Ready Mix Concrete Plants, Companies like L&T, JSW, Goa Sponge & Power, Pooja Steel etc., Contractors, Researchers & Students from GEC, NICMAR & other engineering colleges.

The seminar was a grand success and was appreciated by one and all for the depth of technical knowledge and views exchanged during the seminar.



ICI - NEW DELHI CENTRE

International Congress on Durability of Concrete (ICDC-2014):

The 2nd ICDC was jointly organized by the Norwegian Concrete Association and the Indian Concrete Institute. The ICDC series is built on the heritage of the former CANMET/ACI Conferences on Durability of concrete and Dr. Mohan Malhotra is the Honorary Chair of this series. The 1st ICDC was held in Trondheim, Norway, in 2012. The 2nd ICDC was held in New Delhi, India, in 2014 and the plan is to let these events circle through the world with some years apart with the third ICDC to be held at Adelaide Convention Centre in Adelaide, Australia in October 2017. The ICDC series serve as a forum for exchanging current research results, with the main objective of displaying how concrete will continue to ensure durable buildings and structures for sustainable development in both local and global contexts. Making durable concrete is not only important for ecology (less CO₂ emission and resource consumption), but also economy as maintenance of degrading concrete structures of inferior quality is of significant cost. The complexity of concrete durability demands specialist from different fields, including Chemistry, Geology, Concrete Technologists, Civil Engineers as well as Structural Engineers.

Inaugural Function

Hon'ble Minister of State for Labour and Employment (Independent Charge), Mr Bandaru Dattatreya was the Chief Guest and inaugurated the event. The Ambassador of Norway, Mr. Eivind S Homme was the Guest of Honour.



Director General of Central Public Works Department (CPWD), Mr Divakar Garg, the Secretary General of Norwegian Concrete Association, Ms Henny Braarud, Prof. S. Saraswati, President ICI, senior officials from CPWD and GC members of Indian Concrete Institute (ICI), were presented for the inaugural session.

Chief Guest & Guest of Honour in their respective addresses emphasized the possibility of cooperation between Norway & India. Shri Bandaru Dattatreya in his inaugural address stated that our commitment is to provide housing for all by 2020. Through this congress, he requested all the concerned parties to work towards reducing the cost of construction while maintaining the quality and durability.



We not only want to build structures fast, cheap, with low energy use, we want to be sure that our infrastructure is safe & durable against natural challenges, said Mr. Eivind S Homme, Ambassador of Norway while speaking in the Inauguration Session. Mr. Eivind S Homme also highlighted the exciting new opportunities that India offers in terms of partnerships and markets. He mentioned that Norway wants to be part of the rise of India.



The technical presentations on various aspects were made by many esteemed & eminent speakers covering all the aspects of Durability of Concrete. Totally seventy papers were presented during the seminar. The papers were from India & other parts of the globe. Total deliberation was divided into three categories. Morning session was totally meant for keynote addresses & plenary sessions. Afternoon was dedicated for Technical deliberations in two parallel sessions comprising a total of 12 technical sessions. 236 National Delegates and 20 International Delegates participated in the event

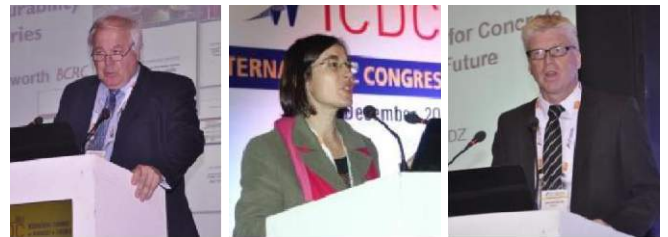
Themes of the conference were

- Sustainability in Buildings and Built Environment A Comprehensive Approach
- Durability enhancing concrete admixtures
- Additions for enhanced durability of concrete
- Concrete deterioration mechanisms
- Methodology for testing durability
- Treatment of existing concrete structures
- Principles of making durable concrete structures

- Durability of off-shore concrete structures
- Sustainability
- Modeling and simulation of degradation
- Processes and material Durability

Keynote addresses:

- ❑ First keynote address was delivered by Dr. Harald Justnes. He talked on “Durability of Concrete with SCMS-Physical and Chemical Principles”.
- ❑ Second Keynote Address was delivered by Mr. Christoph Muller. He talked about “Durability Requirements for Concrete Today and In The Future”.
- ❑ Third Keynote address was delivered by Karen Scrivener on “A Generic Approach to Understanding the Durability of New Cementitious Materials”
- ❑ Fourth Keynote Address was delivered by Mr. Frank Papworth. He talked on “Overview of CIA Development of Durability Recommended Practices”



Award & Cultural Program

Dr. V M Malhotra Award to encourage and acknowledge contribution to the development of durable and sustainable concrete was presented to Frank Papworth for his outstanding and sustained contribution in the broad area of durability of concrete during the dinner get together organized on 5th Dec night. The award function was followed by Cultural program and Dinner



his happiness on the successful completion of the conference. Mr. Supradip Das summarized the deliberations, presentations and discussions that happened during the three days of the conference. During the sessions, the delegates gave their feedback on 2nd ICDC and offered their valuable suggestions on future events. Everybody opined unanimously that such types of congresses should happen quite often. At the end, it was declared that third ICDC will be held at Adelaide Convention Centre in Adelaide, Australia in October 2017.



Closing Session

At the closing session, Prof. S. Saraswati delivered the welcome address and expressed



ICI - BENGALURU CENTRE

Training Programme:

ICI-Bengaluru Centre and M/s. Ardex Endura (India) Pvt. Ltd. jointly organized construction chemicals product awareness training with application at M/s. Ardex Endura Training Centre on 19th December 2014. The event was a grand success and was attended by 25 construction Industry professionals including ICI Members, Leading Consultants, Leading Applicators & Contractors.

The training gave in depth knowledge on latest technology in waterproofing systems,

Industrial Flooring Systems and Repair/ Rehabilitation Solutions.

Later, application of selected products were demonstrated and the attendees found it very informative. Many construction Industry professionals tried application of products on their own hands and felt very happy with the training facility at Ardex Endura Company.

Ms. Sapna Devendra, Secretary ICI-BENC, Dr. R Nagendra, Chairman, ICI-BENC, Mr. L R Manjunatha, Mr. N R Ashoka, Mr. MN Ramesh and other professionals participated in this event.

PHOTO GALLERY



ZERO WASH-OUT ADMIXTURE FOR LARGE UNDERWATER CONCRETING PROJECT IN INDIA A SUSTAINABLE MEGA-PROJECT

by
ISHITA MANJREKAR & SOURABH MANJREKAR

Paper Presented in "International Congress on Durability of Concrete (ICDC-2014)"
on 4-6th December 2014 held at New Delhi.

Synopsis: This paper maps the development of Anti-washout admixtures for the first time on the Indian subcontinent. Anti washout admixture was required to be used for the construction of a weir for the SriSalem Dam across the Krishna River in Andhra Pradesh, India. The project required 30000 cubic meters of concreting to be done under water without the erection of a cofferdam and the project cost was estimated to be about \$5.6 million. The consultants were SNC Lavelin, Canada and the contractors were Patel Engineering, India. Since there were no manufacturers of anti washout admixture in India, this was a significant development from Sunanda Speciality Coatings Pvt. Ltd.'s lab involving over 100 trials that culminated in about 90000 liters of the admixture being used in the project.

Keywords: *under water concreting, anti-washout admixture, admixture, mix design*

INTRODUCTION

In mega hydro power structures and for mass underwater concreting projects like construction of weirs, concreting for dams, erection of caissons, concrete placed under water is inherently susceptible to cement washout, laitance, segregation, cold joints, and water entrapment. Consequently, concrete placed under water is required to remain cohesive. A high degree of cohesiveness improves homogeneity and strength of the underwater concrete by minimizing cement washout. The required

degree of concrete cohesion, however, depends on many variables such as the thickness and configuration of placements, flow distance, required in-place strength, and exposure to flowing water during placement. At the same time, it must possess some unique workability characteristics. The essential workability requirements are that the concrete must flow easily, retain adequate cohesion against washout and segregation, and possess self-consolidating characteristics (because it is impractical to consolidate concrete under water by using mechanical vibration)

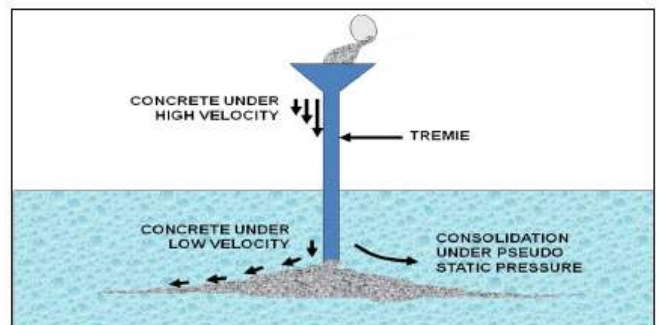


Figure 1. Kinetic States of concrete as it is placed underwater.

Concrete placed underwater typically undergoes a wide range of kinetic states i.e. concrete falls through a tremie pipe at a high velocity, it mixes and flows out of the tremie pipe at slower speeds and finally consolidates under pseudo static conditions.

Underwater concrete must be able to easily flow out of the tremie pipe, completely fill the placement area and consolidate under its own weight. It is reported¹ that the workability of underwater concrete should be higher than 175mm slump which helps in self

consolidation under its own buoyant weight. The workability of underwater concrete includes additional requirements such as self-leveling and high anti-washout characteristics.

Research indicates that in-place concrete quality is closely related to the way concrete flows underwater[4]. Investigations reveal that concrete generally flows underwater in one of the following two patterns: Pattern 1: Bulged flow; Pattern 2: Layered flow

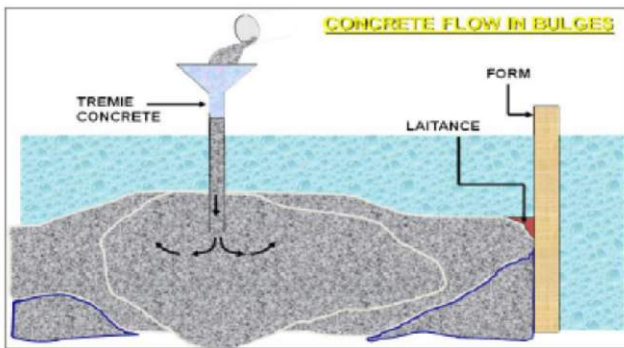


Figure 2. Bulged Flow

When concrete is highly flowable and cohesive it tends to flow in a "bulged flow pattern" where newly placed concrete pushes previously placed concrete sideways forming a successive series of bulges. It has been found that bulged flow pattern tends to develop concrete with a relatively flat, smooth top surface and good in place quality.

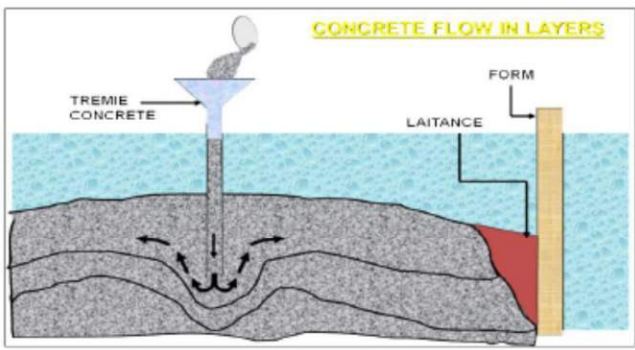


Figure 3: Layered Flow

On the other hand less flowable concrete flows in a "layered pattern" where newly placed concrete flows upwards around the placement pipe and over the top of the previously placed

concrete. Apparently this layered flow pattern exposes more concrete surfaces to water and is usually associated with steeply sloped and rugged top surface with large quantity of laitance; hence it was understood and established that the mixture proportions of underwater concrete had to be a compromise between its flowability and cohesion. Without the use of admixtures, these two inversely related properties could not be attained because higher flowability leads to less cohesive concrete and vice versa

WEIR PROJECT AT SRISALEM, HYDERABAD-INDIA

M/s Patel Engineering Ltd, Mumbai are the pioneers in heavy civil engineering construction since the 1950's, especially in hydro power structures were awarded the job as turnkey contractors for the construction of a weir project at Sri Salem, Hyderabad

PROJECT DETAILS:

| | |
|------------------------|--|
| Project Title | : Weir Project at Srisalem, Dam, Srisalem. |
| Clients | : Andra Pradesh Power Generation Company (APGENCO) |
| Clients Consultants | : SNC Lavelin Limited, Canada |
| Contractors | : Patel Engineering Limited, Hyderabad |
| Concreting for Weir | : 30,000 cu.m. (39,244 c.y.) |
| Dredging quantity | : 40,000 cu.m. (52, c.y.) 325 |
| Estimated Project Cost | : Rs. 25 Crores (approx \$5.6 million) |

MIX DESIGN DETAILS OF UNDERWATER:

Desired Strength: M20 grade of concrete

Slump requirements: 170 mm 230 mm with admixtures

Anti-washout admixture specified for tremie concrete.

The effectiveness of anti-washout admixtures shall be measured in accordance with the United States Corps of Engineers specification CRD-C61 "Test method for determining the resistance of freshly mixed concrete to washing out in water" issued on December 1st 1989.

The maximum washout shall not exceed 8% cumulative mass loss.

The tremie concrete mix shall include water reducing, retarding and anti-washout admixtures.

15% of the cementitious material shall consist of a natural pozzolan or fly ash.

Alternatively 8-10% silica fume may be used instead of a natural pozzolan or fly ash

NEW BEGINNING

M/s Patel Engineering, Mumbai and the consultants tried to source anti-washout admixtures in the Indian subcontinent. Most construction chemical manufacturers concluded that the admixture would need to be imported. Additionally, the efficacy and compatibility of such an admixture can be ascertained only after laboratory and site trials. Furthermore, sourcing the product from outside India meant a delay in procurement of material for already awarded time bound contract. Finally the economics began to break down due to the additional freight and import duties.

M/s Patel Engineering in January 2004 then approached one of leading construction

chemicals manufacturing company in Mumbai, India with an ISO 9001:2008 accreditation for research and development to develop and manufacture an anti-washout system for the first time in the country.

RESEARCH & DEVELOPMENT EFFORTS

On the global scene, development of anti-washout admixtures for underwater concreting was a relatively new development. Although initial work was reported in early seventies, well developed, conclusive work has only been reported in the early nineties.

The project was divided into two parts:

- I. Product development, mix design trials and site testing from Jan 2004 to Apr 2004.
- II. Placement of 30000 cu. m. (39,000 cy) of underwater concreting from May-June 2004.

The R & D division of the selected company is recognized by **ISO 9001-2008** and has in-house capabilities to develop materials. Following an extensive literature survey an experimental program was started at the R&D lab. For almost two months several experiments were conducted to make sure that the desired requirements of slump, anti-washout properties, and strength after seven days, along with simultaneous compatibility with fly ash and cement were fulfilled.

After more than 100 trials the final formulation was developed and was satisfactory in terms of anti-washout properties, compatibility and desired development of strength of concrete. Subsequent to this, various trials were conducted at the concrete laboratory of Jawaharlal Nehru - Technological University, Hyderabad (JNTU) in the presence of the company's R & D engineers, and engineers from Patel Engineering Ltd and concrete technologists from JNTU.



The following is the final developed mix design for the representative successful trial using antiwashout admixture and compatible superplasticizer conducted at Jawaharlal Nehru Technical University in Hyderabad.

Successful Trial

| | |
|------------------------|----------------------|
| w/c Ratio | 0.45 |
| Cement | 7.980 Kg (17.60 lbs) |
| Fly Ash | 2.660 Kg (5.86 lbs) |
| C.A. 40 mm (1.57 in.) | 20 Kg (44.00 lbs) |
| 20 mm (0.80 in.) | 10 Kg (22.00 lbs) |
| Sand | 9.580 Kg (21.12 lbs) |
| Dust (0-5) | 9.580 Kg (21.12 lbs) |
| Water | 4.880 l |
| Superplasticizer | 70 ml |
| Anti-Washout Admixture | 10 ml |
| Slump | 170 mm (6.70 in.) |

The main aim of this exercise was to develop a user friendly material which can be easily handled on difficult sites in difficult terrains. The designed material was also tested for skin irritation after conducting trials on humans. The results of these trials were found satisfactory.

After satisfactory test results from the JNTU and approval from the consultants around 10000 liters of anti-washout admixture and 78,000 liters of compatible superplasticizer were dispatched to the project site. These tailor made materials were manufactured and transported to the project site at Srisalem in Andhra Pradesh at an average of 10,000 liters per day in eight consignments.

QUALITY ASSURANCE

As per ISO guidelines quality control at all the stages was strictly adhered to. This included quality control of raw materials, process control, quality control of finished goods, and quality control of packaging.

After the actual laboratory tests, various on-site tests were also conducted to monitor and check the behavior of concrete after admixing the designed anti-washout admixture and compatible superplasticizer.

To monitor the quality control at site, a team of R&D scientists, concrete technologists, and quantity surveyors were deployed from the manufacturing company in Mumbai to the site at Srisalem, Andhra Pradesh.



Figure 4: Project site of Srisalem Dam, Andhra Pradesh, India

CONCLUSIONS

One of the greatest challenges confronting the concrete industry in the 21st century is to meet the enormous needs of a rapidly industrializing and urbanizing world along with conservation of national resources. In the Indian context, that means conservation of limestone reserves (used for cement manufacturing), use of supplementary additives (fly ash, GGBS, silica fume) to concrete and implementing logistics so as to reduce the carbon footprint of all associated operations.

The development of anti-washout admixtures has had a revolutionary impact on the performance and sustainability of underwater concrete. Underwater concrete can now achieve high flowability at a low water-cement ratio, and yet retain adequate cohesion to resist cement washout, concrete segregation, and bleeding. Successful underwater concreting with the use of the anti-washout admixture and fly ash at Srisailam dam, Hyderabad, played a major role in saving more

than 7 million tons of cement which otherwise would have washed out (45% saving in direct cement cost). The utilization of more than 3 million tons of fly ash (resulted in a 20% savings due to the substitution of cementitious material). The project was completed in 45 days producing an overall reduction in the carbon footprint.

Primarily this breakthrough in the anti-washout technology for the first time in India has made the construction of hydraulic structures sustainable. Hydraulic structures are of paramount importance for making India self sufficient in terms of hydro-power projects, irrigation projects and so forth. The use of such anti-washout admixtures, has opened avenues for many applications in the construction industry in India wherever underwater concreting becomes necessary such as cases of seismic retrofit design and construction of bridges, tremie concreting to connect precast concrete pile caps, underwater repair of stilling basins, concreting for caissons, concreting for jetties, weirs, dams, canals, etc.

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NANDHA ENGINEERING COLLEGE - ERODE

1. Hands-on Training:

The ICI Students Chapter of Nandha Engineering College organized Hands-on Training in Loading Frame for the PG Structural Engineering students through M/s. SOFEEL Marketing & Technical Service Pvt. Ltd., Chennai. In this training, various sections made of concrete as well as steel sections like ISMB 500 were used as test specimen and simply supported load step up



arrangements were made for testing. From this training, the students got an idea on test setup arrangement and on how to test different specimens using loading frame. The PG students interacted with Mr. V. S. Soundararajan, Director, M/s. SOFEEL Marketing and Technical Services Pvt. Ltd., and his team, to get their doubts clarified.



2. Site Visit:

The ICI Students Chapter members underwent a site visit to CSIR - Structural Engineering Research Centre (SERC), Tharamani, Chennai on 26th September 2014. A team of PG students and 2 faculty members visited SERC laboratories. Fatigue & Fracture

Testing Lab, Seismic Testing & Research Lab, Materials Testing Lab, and Structural Health Monitoring Lab are some of the laboratories visited. Students were briefed on the completed and on-going research projects.



Students visited Fatigue & Fracture Testing Lab



Open day visit to CSIR laboratory

3. Workshop:

The ICI Students Chapter members arranged a Workshop on “Working of Total Station” on 14th August 2014 in the college campus. The training was given by Er. Anand, Trainer, Lawrence & Mayo (India) Pvt. Ltd.,

Chennai.

Total station is the advanced Surveying instrument which consists of all surveying measurements linked with software.



4. Site Visit:

Second Year ICI Students Chapter members undertook site visit to JM Spaceframe Roof and PEB Structures, Coimbatore, along with one faculty member on 12th August 2014. The Structure is located at 16 kms from Coimbatore City. The JM Constructions specializes in Space Frame Roofing, Pre-Engineered Buildings (PEB), Pre-Fabricated Structures and Skylights.

Students acquired knowledge on the modern cost effective constructions.



5. Elucidation on "Job and Career Openings in Abroad":

The ICI Student's Chapter and Department of Civil Engineering, Nandha Engineering College (ICI-NEC) had arranged Elucidation on "Job and Career Openings in Abroad" on 09th Sep 2014 by Mr. Sayedosama, HR Consultant, WISA International Consulting, Mumbai. He explained on doing higher studies abroad, especially in Canada and Russia. He also briefed the procedure of getting citizenship in those Countries and clarified the student's doubts regarding higher studies abroad. The students were much

enchanted and thanked Mr. Sayedosama for giving valuable information.



6. Training on "Corporate Exposure"

The ICI Students' Chapter of Department of Civil Engineering had arranged for training on "Corporate Exposure" on 1st Sep 2014 by Ms. J. P. Sindhu, Management Trainer, Karaikudi. She presented the planning procedure in Modern Construction Management. In her talk, she motivated the students by presenting some admiring videos to develop self-confidence and spoke on job opportunities abroad in construction management.

The students were quite receptive to Ms. J. P. Sindhu for her valuable information.



7. Training on "Design of RC Elements":

The ICI Students' Chapter of Nandha Engineering College organized a training on "Design of RC Elements" by Dr. G. S. Thirugnanam, Prof. & Head, Department of Civil Engineering, Institute of Road and Transport Technology (IRTT), Erode on 18th October 2014, for Third Year students. In his training, he explained about the trends in Design of Reinforcement Elements and

compared the Method of Design of Concrete Structures like Ultimate Load, Limit State Design and Working Stress method. He also presented details on various code books and specifications available in RC elements like IS 456:2000, SP-16, etc. Finally, he concluded with standard method of detailing reinforced concrete beams, slabs and columns.



Training session by Dr. G. S. Thirugnanam



ADHIPARASAKTHI ENGINEERING COLLEGE, MELMARUVATHUR

Workshop:

Two-Day Workshop on Bridge Design and Fabrication was jointly organised by Zephyr IIT Bombay, ARK Solutions, Mumbai; and Department of Civil Engineering on 13th & 14th of October 2014 in association with ICI Students Chapter. The workshop was conducted to give both theoretical and practical knowledge to the students on bridge design and fabrication. In the first day morning session, general details about the Bridge, Design Concepts, Software used etc., were presented by Mr. Shaikh Shahbuddin, Zephyr IIT Bombay & ARK Solutions, Mumbai.

In the afternoon session, he explained and trained the students on the design of bridge structure using the software supplied by the organiser.

In the second day morning session, different groups of participants fabricated their bridge model according to their own design. In the afternoon session, testing the model bridge fabricated by each batch with load setup was

done. Finally, the maximum load carried by the model bridge was selected as winner of the event. The programme ended-up with valedictory function. Prizes and certificates were distributed by Principal Dr. V. Ramasamy. Prof. R.Venkata Krishnaiah, HOD, Civil welcomed the student participants and Mr. A.Krishnamoorthi & Mr.V.Vimalantham, Asso.Profs organized the Workshop.



Mr. Shaikh Shahbuddin



Students fabricating their Model Bridge



Valedictory Function



Certificate Distribution

B.S. ABDUR RAHMAN UNIVERSITY, VANDALUR - CHENNAI

Inauguration of ICI Students' Chapter:

The inauguration of ICI Students' Chapter was held on 25th November 2014 at B. S. Abdur Rahman University, Vandalur, Chennai. The Chief Guest of the function was Dr. Ravindra Gettu, Professor, BTCM Division, IIT Madras & Chairman, ICI-Chennai Centre. The function began with Qirath by B. Mohamed Mujeebur Rahman, postgraduate student of Structural Engineering. Welcome address was delivered by Dr. M.S. Haji Sheik Mohammed, Professor & Head, Department of Civil Engineering. Dr. V. M. Periasamy, Pro-Vice Chancellor, delivered the Presidential Address. Felicitations were offered by Dr. V. Murugesan, Registrar and Dr. M.V. Molykutty, Dean, School of Infrastructure. Er.R. Radhakrishnan, Secretary General, ICI explained about the various activities of Indian Concrete Institute, which was followed by the introduction of the Chief Guest by Dr. J. Revathy, Professor, Department of Civil Engineering.

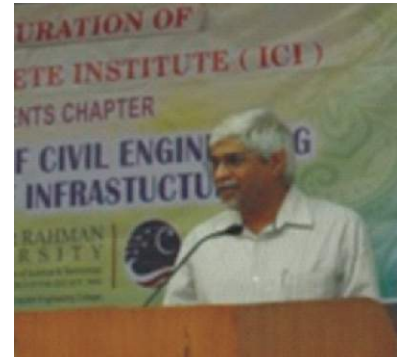


Dr. J. Revathy

The Chief Guest gave the inaugural address and encouraged the students to equip themselves with field knowledge and become ethical Structural Engineers in the future. The members of the ICI Students' Chapter were introduced. The proposed activities for the forthcoming year were disclosed by Dyana Joseline, Student Secretary, ICI Students' Chapter. The Chief Guest, Dr. Ravindra Gettu presented a technical lecture on "Improving the Sustainability of Concrete Technology through Effective Use of Admixtures". The positive and negative impacts of Concrete Technology on the environment, economy and society were explained with statistical illustrations.



Er. R. Radhakrishnan



Dr. Ravindra Gettu



Students and Faculty members

The effective use of chemical and mineral admixtures on durability and its impact on the environment was also explained in detail with real time examples. The exposure to ongoing research in the area of Concrete Technology proved to be an eye opener and inspiration for all the students.

SRM UNIVERSITY, RAMAPURAM CAMPUS

1. Site Visit :

Final year Students of Civil engineering visited the Ennore Port on 20th of Aug 2014. Various facilities of the Port such as dock yards, loading and unloading berths, conveyors etc were observed by the students. It was a rare learning experience on the marine structures.



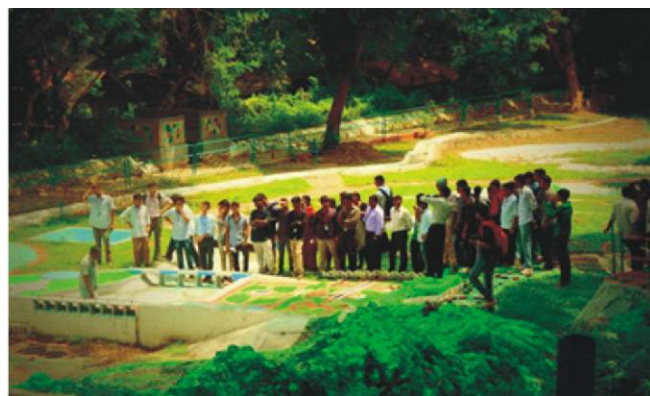
2. Site Visit :

3rd year civil engineering students underwent a site visit to Poondi Reservoir, also known as Sathyamoorthy Sagar, on 8th and 9th October 2014. It is about 60 km from Chennai. It is a huge reservoir with an area of about 121 square miles and a main source of feeding water to Chennai.



Overview of the Reservoir

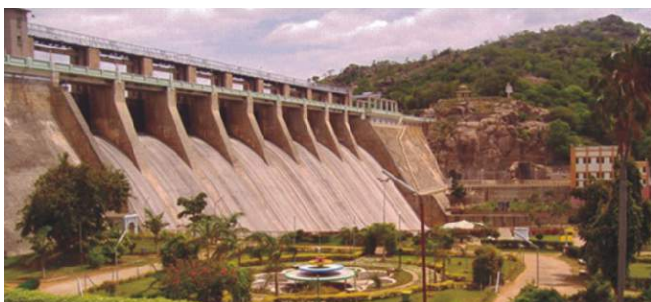
Overall, trip was very interesting and the students gained good knowledge on Dam Construction.



Students viewing the Models

3. Site Visit :

Third year students visited Sathanur Dam on 11th October 2014. Sathanur Dam, is one of the major dams constructed across the Pennaiyar River.



Aerial view of the dam

The visit to the dam was exhaustive, adventurous and a whole new experience.

While walking through the tunnel, students felt V-Notch and Rectangular Notches. Students were taught practically about working of notches. The instructor explained the salient features of the dam.

The visit gave an insight to the students about the dam and its construction.

4. Technical Lecture:

Students Chapter of SRM University, Ramapuram Campus, Chennai organized a lecture by Prof. Mark Alexander, President-RILEM, University of Cape Town, South Africa, on September 30, 2014.

Dr.T.Ch.Madhavi, Professor and Head, Department of Civil Engineering welcomed the august gathering. Dr. V.Subbiah Bharathi, Dean and Dr. Antony Michael Raj, Vice Principal, SRM University felicitated the occasion. Dr. Mark Alexander also distributed prizes for the winners of the various technical events held earlier.

Prof. Mark Alexander gave a lecture on 'Durability of Concrete'. The lecture was well received by more than 220 students. At the

end of lecture, an interactive session was held in which students raised several queries. Dr. Mark Alexander responded, sharing his experience.



Prof. Mark Alexander addressing



On the Dias, Dr.Antony Michael Raj, Dr.Mark Alexander and Dr.T.Ch.Madhavi



CONGRATULATIONS !!!



Dr.T.Ch.Madhavi, (ICI LM-7926) was awarded the ISTE Shayeta Akhtar Memorial National Award for Best woman Engineering College Teacher at the ISTE Annual Convention held at Trivandrum in November 2014. ICI congratulates for her achievement.

VISHWA KARMA INSTITUTE OF INFORMATION TECHNOLOGY, PUNE

Guest Lecture:

The Students Chapter of Vishwa Karma Institute of Information Technology organized a Guest Lecture on 23rd December 2014 on QUALITY ISSUES IN CONCRETE. The Lecture was delivered by Prof. Hemant Joshi and Ar. Suresh Athavale.

Prof. Hemant Joshi and Ar. Suresh Athavale enlightening the students about the importance of knowledge learned in four years of Civil Engineering programme. Mr. Hemant Joshi spoke about controlling Quality in

Concrete work with the help of Case Studies. He also shared his own experiences on site and also about the importance of "Quality Control" through Practical Examples. Students of third Year attended this informative lecture. Faculty members Mr. Nitsure, Mr. Mahajan and Ms. Tanawade welcomed the Chief Guests Mr. Hemant Joshi and Ar. Suresh Athavale . The event concluded with vote of thanks.



Ar. Suresh Athavale



Prof. Hemant Joshi



N.S.N. COLLEGE OF ENGINEERING & TECHNOLOGY - KARUR

1. Concrete Day:

Concrete Day was celebrated by N.S.N. College of Engineering and Technology in association with Indian Concrete Institute on 15th September 2014 at the seminar hall. More than 150 students from Civil Engineering Department attended this event.

Dr.M.Sivaraja, Professor & Principal of NSNCET, welcomed the gathering and highlighted the importance of Concrete Day Celebrations. Mr. L.S. Jayagopal, Managing Director, Mithran Structures Pvt. Ltd., was the Guest of Honour. He delivered a brief

lecture on “HISTORY OF CIVIL ENGINEERING”. He shared his industrial experience and discussed about various problems faced in designing a project.

Ar.N.Nallusamy, Secretary of NSNCET & Mr.T.K.Palaniappan., Director of NSNCET felicitated the celebration. It was a fruitful interactive session for the students. The presence of Civil Engineers from various Construction Industries made this event a great success. Dr. P. Gomathi, Dean, NSNCET, rendered vote of thanks.



2. Guest Lecture:

Technical lecture on “Suitable Cement for Critical Structures and its Quality Parameters” was organised by ICI Students Chapter on 24th December 2014. The lecture was delivered by Er. Bilal M, Deputy Manager, Technical Services, RAMCO Cements Limited.

Mr. Ramachandran, Senior Manager, Technical services briefed about Mix Design & its parameters. Dr.M.Sivaraja, Professor & Principal, welcomed the gathering. The lecture was well attended by more than 150 Student members & Faculty members.



3. Cube Contest:

Cube Competition was conducted on 24th & 26th December 2014 by ICI Students Chapter in association with RAMCO Cements Ltd. Er. Bilal M, Deputy Manager, Technical Services, RAMCO Cements Limited reviewed and commended on the performance of various teams. The raw materials were supplied by RAMCO Private Ltd Company. Each group was guided by a professional from RAMCO Cements Limited.



The award ceremony of the cube strength competition was held on 26th December 2014 at N.S.N.CET Auditorium. The Chief Guests of this function were Er. Bilal and Mr. R. Ramachandran. They advised the students to participate in such events and exhibit their talents. The winning team was awarded with certificates and Awards from RAMCO Cements Limited.



After finishing the moulding, the students had a querying session in the concrete laboratory. Professionals from RAMCO Cements clarified their doubts.

The cubes were cured for one day and tested on 26th December 2014. The team which prepared the cube with highest compressive strength was selected as the best team in that contest.



DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE AND TECHNOLOGY, MURTHAL

1. Site Visit :

A site visit was organized on 13th November 2014 to a new Sewage Treatment Plant which is under construction at Village Siwah, Panipat, by ICI Students Chapter of Department of Civil Engineering along with faculty members Er. Sunita Kumari and Er. Aman Ahlawat. This sewage treatment plant was constructed for Industries in Siwah Industrial Area of Panipat. The project was sponsored by Asian Development Bank through National Capital Regional Planning Board. Students were briefed about the latest

technology used in Sewage treatment. All the processes of sewage treatment were explained to the students.



2. Guest Lecture:

Guest Lecture was organized by ICI Students Chapter on "Flexible and Rigid Pavements" by Er. Satender Kumar, retired Dy. Director, CRRI on 24th November 2014. He shared his experience in the field of Construction of Flexible and Rigid pavements. He elaborated the importance of concrete

pavements and various methods of maintenance and also pointed out various quality parameters for Rigid pavements, Advance techniques used in construction of Rigid pavement were also included in his presentation.

New Members

ICI UPDATE - DEC. - FEB. 2015

| Sl.No. | M.No | Centre | Name | Place |
|-----------------------------------|-------|-------------|--------------------------|---------------|
| A. Individual Life Members | | | | |
| 1 | 10461 | Bengaluru | Er Abraj T Vettuparampil | Bengaluru |
| 2 | 10472 | | Er Venugopal K | Bengaluru |
| 3 | 10473 | | Er Muralidharan R | Bengaluru |
| 4 | 10476 | | Dr Vivek R Das | Bengaluru |
| 5 | 10478 | | Er Nagaraj K V | Bengaluru |
| 6 | 10479 | | Er C R Srinivasan | Bengaluru |
| 7 | 10491 | | Er J. M. Srishaila | Bengaluru |
| 8 | 10497 | | Er Sanjith J | Chikkamagalur |
| 9 | 10505 | | Er Manu J. Srivatsa | Bengaluru |
| 10 | 10540 | | Er Ganesh M | Mandya |
| 11 | 10541 | | Er Bipin G.k | Bengaluru |
| 12 | 10569 | | Er Sethumadhavan P | Bengaluru |
| 13 | 10570 | | Dr Chandradhara G. P | Mysore |
| 14 | 10571 | | Er Raviraj S | Mysore |
| 15 | 10480 | Bhopal | Er Sankalp Shrivastava | Rewa (M.P) |
| 16 | 10466 | Bhubaneswar | Dr Umesh Chandra Sahoo | Bhubaneswar |
| 17 | 10467 | | Er Dinakar Pasla | Bhubaneswar |
| 18 | 10487 | | Er Satya Ranjan Mishra | Bhubaneswar |

| Sl.No. | M.No | Centre | Name | Place |
|-----------------------------------|-------|-----------|----------------------------------|--------------------|
| A. Individual Life Members | | | | |
| 19 | 10462 | Chennai | Er PS. Esther Sarah | Chennai |
| 20 | 10465 | | Er Sheelu Verghese | Chennai |
| 21 | 10474 | | Er Rajmohan R | Chennai |
| 22 | 10475 | | Er Jeyakar B | Chennai |
| 23 | 10486 | | Er Karthikeyan J | Tiruchirappalli |
| 24 | 10504 | | Er Prahatheswaran V | Karur |
| 25 | 10534 | | Er G. Jayarajan | Chennai |
| 26 | 10535 | | Er Elangovan K | Chennai |
| 27 | 10536 | | Er Devendiran A | Chennai |
| 28 | 10537 | | Er Nalini S | Chennai |
| 29 | 10538 | | Er Vinodhini Ellappan | Chennai |
| 30 | 10539 | | Er Rana Pratap S | Chennai |
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| 32 | 10553 | | Er Harikrishnan V | Chennai |
| 33 | 10554 | | Er Sathish Kumar V | Chennai |
| 34 | 10555 | | Er Jaganathan V | Chennai |
| 35 | 10566 | | Er Sunitha P | Chennai |
| 36 | 10567 | | Er Murugesan | Chennai |
| 37 | 10568 | | Er Rupen Goswami | Chennai |
| 38 | 10574 | | Er Sivakumar J | Chennai |
| 39 | 10576 | | Er Jerald Peter Damien J | Chennai |
| 40 | 10512 | Delhi | Er Lincy Varghese | New Delhi |
| 41 | 10526 | Goa | Er Candido Andre Kennedy D'costa | Vasco |
| 42 | 10545 | Hyderabad | Er Bangar Raju Pakalapati | Hyderabad |
| 43 | 10546 | | Er Pasupuleti Haribabu | Hyderabad |
| 44 | 10557 | | Er Kacharla Rajkumar | Hyderabad |
| 45 | 10507 | Jaipur | Er Ram Kumar Lodha | Kota (Raj) |
| 46 | 10551 | | Er Sumit Kumar Verma | Jhunjhunu (Raj) |
| 47 | 10524 | | Er Anirudh Mathur | Jodhpur |
| 48 | 10488 | Kochi | Dr Vijayan P | Thrissur |
| 49 | 10489 | | Er Sivan P P | Thrissur |
| 50 | 10490 | | Er Arun S | Thiruvananthapuram |
| 51 | 10506 | | Er Liju M.S | Kollam |
| 52 | 10556 | | Er Shankaran A | Kochi |
| 53 | 10520 | | Er Ashish Cherian Philip | Kottayam |
| 54 | 10492 | Mumbai | Er Shri. Nitish Pramod Beri | Kolhapur |
| 55 | 10513 | | Er Amit Sandal | Mumbai |
| 56 | 10464 | Nagpur | Er Rajesh Parashuram Dhamge | Nagpur |
| 57 | 10485 | | Er Ankit Suresh Gandhi | Darwha |
| 58 | 10501 | | Er Sanjay Ambadas Thakur | Akola |
| 59 | 10509 | | Er Deogade Aashish T | Nagpur |
| 60 | 10510 | | Er Ravindra Vasanttrao Deshpande | Nagpur |
| 61 | 10511 | | Er Devaki Dilip Mase | Nagpur |
| 62 | 10544 | | Er Nimita Rajiv Gautam | Nagpur |
| 63 | 10558 | | Er Gireesh P Kulkarni | Nagpur |
| 64 | 10559 | | Er Prashant Anantrao Saraf | Nagpur |
| 65 | 10560 | | Er Manish Dattatraya Moharir | Nagpur |
| 66 | 10564 | | Er Abhijit Laxmanrao Deshpande | Nagpur |
| 67 | 10543 | Overss | Er Christophe Cortinovis | Sesena (Spain) |
| 68 | 10542 | Patiala | Ar Aniket Sharma | Hamirpur (Punjab) |

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| 71 | 10575 | | Er Jagveer Singh Kajla | Rohtak |
| 72 | 10577 | | Er Arun Kumar Verma | Panchkula (haryana) |
| 73 | 10521 | | Er Varinder Singh | Mohali |
| 74 | 10523 | | Er Prateek Gupta | Sirsa |
| 75 | 10562 | | Er Satish Kumar J | Puducherry |
| 76 | 10515 | | Er Baskaran G | Puducherry |
| 77 | 10516 | | Er Sadhasivam C | Puducherry |
| 78 | 10517 | | Er Pourouchottamane N | Puducherry |
| 79 | 10518 | Er Sabastin Martial M | Puducherry | |
| 80 | 10519 | Er Baskar Seetharam | Puducherry | |
| 81 | 10525 | Er Nakiran K | Puducherry | |
| 82 | 10470 | Pune | Er Prasad Vinayak Joshi | Pune |
| 83 | 10471 | | Er Nitin Narasinh Prabhune | Pune |
| 84 | 10481 | | Er Chandrashekhar P. Kakade | Pune |
| 85 | 10482 | | Er Nilesh Shankar Chavan | Pune |
| 86 | 10483 | | Er Ashwini Sunil Chavan (Patil) | Pune |
| 87 | 10498 | | Er Chandrashekhar Balkrishna Kulkarni | Pune |
| 88 | 10499 | | Er Ajay Nandlal Thourani | Pune |
| 89 | 10500 | | Er Jagannath Jadhav | Pune |
| 90 | 10502 | | Er Tawade Swaroop | Pune |
| 91 | 10503 | | Er Ranjeet Ramdas Kakade | Pune |
| 92 | 10547 | Er Vinayak Shriram Hardikar | Pune | |
| 93 | 10548 | Er Jeevan Koolothumkandy | Pune | |
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| 96 | 10514 | Er Swanand C. Patodkar | Pune | |
| 97 | 10528 | Er Kailas Suresh Kenjale | Pune | |
| 98 | 10529 | Er Sucheta Kalawar | Pune | |
| 99 | 10530 | Er Rahul Shrikishan Ladda | Pune | |
| 100 | 10531 | Er Joy K Jose | Pune | |
| 101 | 10532 | Er Khopkar Vishal Chandrakant | Pune | |
| 102 | 10493 | Uttarakhand | Er Siddharth Behera | Roorkee |
| 103 | 10494 | | Er Lok Pratap Singh | Roorkee |
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| 105 | 10496 | Er Rajeeva Kumar Sharma | Roorkee | |
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| 107 | 10484 | | Er Ram Awadhesh Kumar | Muther (Bihar) |
| 108 | 10522 | Er Rakesh Chandra | Lucknow | |
| 109 | 10533 | Visakhapatnam | Dr C.N.V. Satyanarayana Reddy | Visakhapatnam |
| 110 | 10565 | | Er Dumpa Venkata Sai Rama Krishna Chaitanya | Visakhapatnam |
| B. Organizational Life Members | | | | |
| 111 | 10463 | Bengaluru | Sir M. Visvesvaraya Institute of Technology | Bengaluru |
| 112 | 10468 | Kochi | Saintgits College of Engineering | Kottayam |
| 113 | 10477 | Kochi | Jyothi Engineering College | Thrissur |
| 114 | 10508 | Puducherry | Es Engineering College | Villupuram |
| 115 | 10527 | Pune | Bract's Vishwakarma Institute of Information Technology | Pune |
| 116 | 10561 | Chennai | Dhirajlal Gandhi College of Technology | Salem |
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R.Radhakrishnan
Secretary General

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4th

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ICI-ACECON 2015

ON ADVANCEMENTS
IN STRUCTURAL CONCRETE

Date: 8 - 10, October 2015 | Venue: Science City, Kolkata, India

Organised by:



Indian Concrete Institute

1st

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ACF 2015

On Ultra High Performance Concrete

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